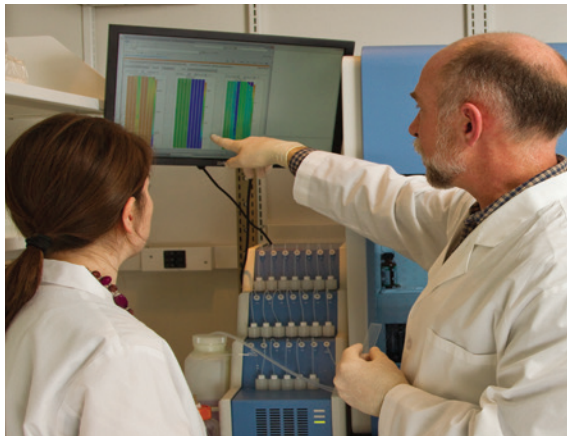
NIH NATIONAL CANCER INSTITUTE

Center for Cancer Genomics
Office of Cancer Genomics



Mission

The National Cancer Institute's Office of Cancer Genomics (OCG) within the Center for Cancer Genomics aims to advance the molecular understanding of cancers with the ultimate goal of improving clinical outcomes. These discoveries will help to enable precision oncology, tailoring cancer treatment to each individual patient.

To learn more and sign up for OCG mailing list, visit: *http://ocg.cancer.gov*
Email: ocg@mail.nih.gov • Phone: (301) 480-4368

Programs

OCG supports large-scale cancer genomic and translational research programs. These initiatives accelerate the translation of genomic findings into the clinic, thereby contributing to precision oncology. These initiatives:

- Generate data, which are disseminated via program-specific databases
- Promote advances in bioinformatics technology and create valuable experimental reagents and tools
- Share data and resources with the research community

CGCI - Cancer Genome Characterization Initiative

CGCI supports research to comprehensively catalog the genomic alterations in adult and pediatric cancers. Two completed projects examined genetic alterations in medulloblastoma and non-Hodgkin lymphoma. CGCI has two ongoing projects. The HIV$^+$ Tumor Molecular Characterization Project (HTMCP) uses genomic and transcriptomic sequencing to uncover distinct features of HIV$^+$-associated cancers, including diffuse large B-cell lymphomas, lung carcinomas, and cervical carcinomas. The Burkitt Lymphoma Genome Sequencing Project (BLGSP) aims to identify genetic changes in patients with sporadic, endemic, and HIV-associated Burkitt lymphoma. The research community can use CGCI data to gain insight into the underlying mechanisms of these cancers and identify potential therapeutic targets within these cancer types. *https://ocg.cancer.gov/programs/cgci*

CTD^2 - Cancer Target Discovery and Development Network

The CTD^2 Network develops and applies new scientific approaches to accelerate the translation of genomic discoveries into novel precision oncology treatments. The CTD^2 Network emphasizes collaborations between laboratories with expertise in areas such as bioinformatics, genome-wide functional *in vitro* and *ex vivo* screening, protein-protein interactions and small molecule high-throughput screening, and RNA interference (RNAi) and clustered regularly interspaced short palindromic repeats (CRISPR)/cas9 screening. The CTD^2 Centers identify clinically-relevant opportunities that can be translated into therapeutic targets for precision oncology. *https://ocg.cancer.gov/programs/ctd2*

The CTD^2 Network developed the CTD^2 Dashboard, a web interface which hosts Network-generated conclusions, provides supporting evidence and background information, indicates the level of functional validation, and links to tools for further data exploration and analysis. *http://ctd2-dashboard.nci.nih.gov*

TARGET - Therapeutically Applicable Research to Generate Effective Treatments

TARGET is a comprehensive molecular characterization initiative that utilizes state-of-the-art genomics tools to identify molecular changes that drive childhood cancers including: acute lymphoblastic and myeloid leukemias, neuroblastoma, osteosarcoma, and several types of kidney tumors. TARGET is organized into a collaborative consortium of disease-specific project teams that focus on identifying alterations that can be targeted using existing therapeutic agents and/or to inform improved treatment strategies. *https://ocg.cancer.gov/programs/target*

Resources for the Research Community

Standard Operating Procedures (SOPs) for BLGSP and HTMCP

- Protocols and templates applicable for submitting samples to HTMCP, BLGSP, and other genome characterization initiatives: *https://ocg.cancer.gov/programs/cgci/resources*

Cancer Genome Anatomy Project (CGAP)

- Online resource of biological tissue characterization data, including gene expression profiles of normal, precancerous, and cancerous cells, along with tools for analyzing these data. CGAP also provides single nucleotide polymorphism analysis of cancer-related genes and the Mitelman database of chromosomal aberrations in cancer: *http://cgap.nci.nih.gov/cgap.html*
- For a virtual tour of the CGAP website, contact OCG for a free CD

Cancer Genetic Markers of Susceptibility (CGEMS)

- Uses collaborative genome-wide association studies to identify genetic variants that affect individual risk of cancer development; now led by NCI's Division of Cancer Epidemiology & Genetics: *http://dceg.cancer.gov/research/how-we-study/genomic-studies/cgems-summary/*

Mammalian Gene Collection (MGC)

- An open-access bank of full-length open reading frame clones for the majority of protein-coding human and mouse genes; some cow, rat, xenopus and zebrafish genes: *http://mgc.nci.nih.gov/*

The ORFeome Collaboration (OC)

- Provides a collection of validated, expression-ready, full-length open reading frames for most of the currently defined human genes: *http://orfeomecollaboration.com/*

Access OCG Data

Accessing CGCI and TARGET Data

Genomic profiles for a variety of tumor types (including clinical, molecular characterization, and processed sequence data) are easily accessible through each program's Data Matrix. Researchers can access up to four levels of data (from raw/trace files through cumulative data) for the molecular platform employed. To protect patient privacy, some clinical and genetic data requires approval for access through NCBI's database for Genotypes and Phenotypes (dbGAP; *http://www.ncbi.nlm.nih.gov/gap*).
Data access guide: *https://ocg.cancer.gov/flowchart/guide-accessing-target-data*
TARGET Data Matrix: *http://target.nci.nih.gov*
CGCI Data Matrix: *http://cgci.nci.nih.gov*

Accessing CTD^2 Data

Raw and analyzed primary data are deposited in the CTD^2 Data Portal and CTD^2 Network-generated conclusions are deposited in the CTD^2 Dashboard. All data generated by this initiative are open access.
CTD^2 Data Portal: *https://ctd2.nci.nih.gov/dataPortal/*
CTD^2 Dashboard: *http://ctd2-dashboard.nci.nih.gov/*

e-NEWSLETTER

An online newsletter featuring research spotlights, educational articles, guest editorials by OCG scientists, and more: *https://ocg.cancer.gov/news-publications/e-newsletters*